MSV
Mobile Satellite Ventures

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August 31, 2004

Via Hand Delivery
Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

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Federal Communications Commission
Office of Secretary

Re: Mobile Satellite Ventures Subsidiary LLC
IB Docket No. 01-185
File No. SAT-MOD-20031118-00333
File No. SAT-AMD-20031118-00332
File No. SES-MOD-20031118-01879

Dear Ms. Dortch:

At the request of Commission staff, Mobile Satellite Ventures Subsidiary LLC ("MSV") hereby files the attached link budgets for its proposed Ancillary Terrestrial Component ("ATC") in the L-band.

Please direct any questions regarding this matter to the undersigned.

Very truly yours,

Lon C. Levin
Vice President

cc: Chip Fleming
Howard Griboff
Kathyrn Medley

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List ABCDE

GSM Link Budget (Forward and Return Link)

RECEIVER	BTS	MS	Unit
RX RF-input sensitivity =	-110	-104	dBm
Interference degradation margin =	0	0	dB
Cable + connector loss (typical) =	3	0	dB
RX Antenna gain =	18	0	dBi
Diversity gain =	5	0	dB
Isotropic power, 50% Ps =	-130	-104	dBm
Lognormal fade margin 50% --> 75% Ps =	7.0	7.0	dB
Isotropic power, 75% Ps =	-123	-97	dBm
TRANSMITTER	**MS**	**BTS**	**Unit**
TX RF-output peak power =	1	40.0	W
	30	46.0	dBm
Combiner loss =	0	3	dB
Cable + connector loss =	0	3	dB
TX Antenna gain =	0	16	dBi
Peak EIRP =	30.0	56.0	dBm
	1	400	W
MAPL			
Isotropic path loss, 50% Ps =	160.0	160.0	dB
Isotropic path loss, 75% Ps =	153.0	153.0	dB
Body Loss	0	0	dB
Indoor (or In-car) Penetration Loss	18	18	dB
Isotropic Path Loss, 75%Ps, Balanced Link	**135**	**135**	**dB**
COVERAGE RADIUS			
Base Station Antenna Height	30.00	m	
Correction factor	0	dB	
Coverage Radius (COST 231 Hata)	**1.01**	**km**	
	0.62	miles	

COST 231 - Hata		
Frequency (Mhz) =	1650	MHz
Mobile antenna height =	1.50	m
	0.040	
C1	155.37	
C2	13.82	
C3	44.90	
C4	6.55	
C5	0.00	

Reverse Link Budget cdma2000			
Parameters	**Units**		**Comments**
Thermal noise density (KT)	dBm/Hz	-174	
Thermal Noise Power in BW	dBm	-113.0	
BTS receiver Noise Figure	dB	5	
Target Eb/Io	dB	5	Target for 1% FER or better
Min CNR	dB	-16.1	Eb/No - PG
Noise at Cell Input (No+NF)	dBm/Hz	-108.0	
BS Rx Sensitivity	dBm	-124.1	
Loading Criteria	%	75	
Loading Correction	dB	6.0	Interference Margin
Effective BS Rx Sensitivity	dBm	**-118.1**	Includes Interference Margin
Base Station Receiver Antenna Gain	dBi	18	
Feed Line Loss	dB	3	
Soft Handoff Gain	dB	3	Assumes 50% cell area in HO
Antenna Space Diversity Gain	dB	5	
Shadowing Margin	dB	7.0	
In building Penetration Loss	**dB**	**18**	
In car Loss	dB	0	
Body+Head Loss	dB	0	
Other Losses	dB	0	
Total Losses	dB	18	
Base Antenna Height	m	30.0	
Mobile Antenna Height	m	1.5	
Hand held Power Out (EiRP)	dBm	21	
Maximum Allowable Path Loss (MAPL)	dB	137.1	
Net Cell Radius .	**km**	**1.15**	**Hata-Cost231 Model**
Frequency	MHz	1650	
Bandwidth	MHz	1.25	Bandwidth per Carrier
Spreading Rate	kbps	1228.8	Chip rate
Data rate	kbps	9.6	EVRC
Processing Gain	dB	21.1	

Capacity Calculation	
Frequency reuse efficiency	0.56
Voice activity factor	0.5
Pole capacity per sector	39
Number of simultaneous users per sector	28

Forward Link Budget cdma2000

	Units	Values	Comments
Transmit Power Calculation			
BTS PA Tx Output Power	W	20	
	dBm	43.0	
Pilot Channel power	W	3.0	
Sync Channel power	W	0.6	
Paging Channel power	W	1.0	
Total Traffic Channel power	W	15.4	
Number of simul. Mobiles (based on U/L)		28	
Overhead factor due to soft hand-off		1.9	2 ways soft- handoff
Effective numbers of simul mobiles		53	All in 2 ways soft H/O
Average power per traffic channel	W	0.3	
	dBm	24.6	
Voice Activity Factor (VAF)		0.50	
BTS Cable Loss	dB	3	
BTS Antenna Gain	dBi	16	
Average EIRP per traffic channel	dBm	37.6	
BTS EIRP per CDMA carrier	W	399.1	Pilot+Sync+Page+Traffic
	dBm	**56.0**	
MS Receive Signal Power Calculations			
Mobile Antenna Gain	dBi	0	
Body Loss	dB	0	
MAPL based on U/L	dB	137.1	
Mobile receive Traffic Channel signal power	dBm	-99.5	
Mobile Total receive signal power	dBm	-81.1	
Interference Power Calculations			
Gain from code orthogonality	dB	8	[Rappaport, p. 124]
Intra-cell Interference	dBm	-89	
Inter-cell Interference	dBm	-90	
Total Noise Calculations			
Boltzmann's Constant	dBW/Hz.K	-228.6	
Thermal noise spectral density(KT)	dBm/Hz	-174.0	
Noise Figure (F)	dB	8	
Total Thermal Noise (KTF)	dBm/Hz	-166.0	
Total Noise Power (N=KTFB)	dBm	-105.1	
Total interference (Io)	dBm	-86.5	
Total interference (Io) spectral density	dBm/Hz	-147.4	
Chip rate	Hz	1.23E+06	
Eb/Io Calculations			
Traffic channel bit rate	bps	9600	
Receive Traffic Channel Energy per Bit (Eb)	dBm/Hz	-139.3	
Traffic Channel Eb/Io	dB	8.1	
Traffic Channel Eb/Io requirements	dB	8	Qualcomm
Margin	dB	0.1	